



9 - 1 1 R e s e a r c h presents this edited transcript of journalist Bonnie Faulkner's January 2004 interview with researcher Jim Hoffman on the destruction of the Twin Towers and Building 7 during the attack of 9/11/01.

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Edited Transcript of **Your Eyes Don't Lie: Common Sense, Physics, and the World Trade Center Collapses**

An Interview of Jim Hoffman by Bonnie Faulkner
On Guns and Butter

Originally broadcast on KPFA in two parts

Part 1: 1/21/04, 2-3PM

Part 2: 1/28/04, 2-3PM

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Note by Jim Hoffman:

I made a number of errors in this interview, which was recorded in January of 2004, a time when I had been reasearching the topic for 10 months.

Please review these [corrections](#).

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Part 1

Bonnie Faulkner: This is Guns and Butter.

Jim Hoffman: The primary deception in FEMA's report is to make you think that the core columns didn't even exist ... but even if you believe all this stuff about these floor diaphragms collapsing, it doesn't begin to lead to a total building collapse, because what you'd have is you'd have these floor diaphragms, which are like rings that extend all the way around the core, and out to the exterior wall, which simply pancake down around the core columns, like records falling down around spindle, leaving both the core structure and the outer wall intact -- no total collapse.

BF: I'm Bonnie Faulkner. Today on Guns and Butter, Jim Hoffman. Today's show, "Your Eyes Don't Lie. Common Sense, Physics, and the World Trade Center Collapses." Jim Hoffman is a software engineer, and research scientist. His work in applying scientific visualization to mathematics was instrumental in the discovery of the first new examples of complete, embedded minimal surfaces in over one hundred years. His work was featured in articles in *Science News*, *Scientific American*, *Science Digest*, and *Nature*. He discovered

new, three-dimensional morphologies for modeling block co-polymers, systems used in a kind of nanotechnology, and co-authored papers in *Science* and *Macromolecules*. He collaborated in the development of new inventions in combustion engineering, and is co-author of a patent for an internal combustion engine with increased thermal efficiency. Jim Hoffman has been researching the World Trade Center collapses since February of 2003, and has created an extensive website, reporting his investigations, and other aspects of the September 11 attack, at www.wtc7.net. He uses common sense and physics to analyze the collapse of the World Trade Center.

Jim Hoffman, welcome.

JH: Thank you.

BF: What was your first impression, on September 11, 2001, when the Twin Towers collapsed?

JH: I was shocked like I think just about everybody was, but the curious thing was that I didn't question the official story. The Towers supposedly collapsed because of collision damage and fire stress, and that was what they were reporting on the day the Towers collapsed. But even though I found it shocking that these huge permanent steel structures could just instantly self-destruct; for some reason -- I don't know why -- I didn't question the official story about that. But then, early in 2003, I picked up a copy of one of the first and still only books that actually addresses the theories that the Twin Towers were demolished instead of merely falling down; the book *Painful Questions*. I started to look into it. I went to the Web, and I found some sites that described what happened, and suddenly I had a completely different understanding of it. Because, when I looked at the images of the Twin Towers blowing up into these huge clouds of dust, suddenly it didn't fit the explanations of these buildings falling down. It became incredibly obvious that these buildings were demolished. And yet, when I watched some of the same footage on September 11, 2001, I don't remember even seeing all that dust. I remember seeing the towers disappear. The building is there, and the next moment it's gone. Shocking. But I don't remember seeing the dust. And the dust is one of the most damning pieces of evidence for the official story. Because how were these buildings pulverized in mid-air? They turned into dust in mid-air. Clearly, it makes no sense according to the official story.

BF: So when did you get involved researching the physical evidence of the Twin Tower collapse?

JH: Well, as soon as I discovered that the official explanation of the Tower collapses was untenable, in late February of 2003, I started researching it intensively, and I started developing a website almost immediately; for my own use at first, to keep track of all the various aspects of September 11, and I just kept building on that. Some other people had already done some really good analysis on the Twin Tower collapses, but there was still an incredibly scant amount of material.

BF: Your work pretty much concentrates on researching the amount of energy required to bring these massive Towers down. Isn't that correct?

JH: Well, I think that's one of my more original contributions, because this paper, "[The North Tower Collapse, An Analysis of The Expansion of The Dust Cloud Following The](#)

Collapse of World Trade Center One", is something that nobody else had done anything like. I remember hearing some comments from scientists early on, to the effect that there must have been some other energy source. Clearly, the idea was out there. But nobody had really articulated it. Even though I'm sure people knew better. I'm sure people understood that expanding those dust clouds required huge amounts of energy, but nobody had published a paper on it, as far as I know, until I did.

BF: How did you make the calculations? Mathematically?

JH: Using mathematics, and using just a few basic laws of physics. There is the Ideal Gas Law, which describes how much heat you would need to expand a given amount of gas by some ratio under constant pressure. That's the Ideal Gas Law, one of the laws of thermodynamics. And then there's another mode of expansion accounted for by the vaporization of water. That's a simple calculation too, because when you boil water, you turn a small volume of liquid water into a large volume of steam, and it's easy to quantify the amount of energy that's required to produce a given amount of expansion due to water vaporization. So it's really very simple physics. This paper, even though it's somewhat detailed, is just basic high school physics. The most basic thermodynamics. Nothing complicated.

BF: So you used basic physics to do your investigation. You're not a structural engineer.

JH: No I'm not. I'm a software engineer, and I have some background in combustion engineering, and just a good science background. But no, I don't have any particular area of expertise on this subject. And that's what I think is so interesting. To understand what happened in the destruction of the skyscrapers in Manhattan does not require any specialized engineering knowledge. And in fact, the arguments that I make are not engineering arguments. The observations that the gravitational energy was insufficient to pulverize these buildings and to produce the observed expansion of the dust clouds, and that gravity-driven collapses would not have caused the buildings to fall straight down following the path of maximum resistance, are physics arguments. You don't have to understand how the building was constructed to understand that a tall structure like that wouldn't just collapse through itself, just ripping itself apart and going straight down. It would topple one way or the other. It wouldn't even have to be made out of steel. It could be made out of toothpicks and the flimsiest materials, but it wouldn't fall through itself. That's not even physics. It's just basic intuition.

Which is why I challenge people to try to construct a model that has basically the same shape as one of the towers. That is, it's seven times as tall as it is wide, and that if you disturb it at the top, using a blowtorch or an axe or whatever, then it will rip itself apart. It will just collapse, starting from the top, and just progressively collapse down. This is a phenomenon that's been dressed up and given the fancy term, "progressive collapse". But how interesting that this term, "progressive collapse", only shows up in the description of building collapses in two cases. One is the collapse of the Twin Towers in New York City, and the other, how interesting, is the Murrah building in Oklahoma City.

BF: With regard to the Murrah building in Oklahoma City, wasn't it the same company who was hired to dispose of the rubble?

JH: ... Of the evidence, yes. Controlled Demolition, Inc., the same company that was

subcontracted by Tully Construction in the aftermath of the World Trade Center collapses to put into effect this plan to recycle the steel, was, one of the same companies that took the evidence from the remains of the Murrah building and buried it before it could be properly investigated.

The Oklahoma City bombing is itself a very interesting case. I think it's the most direct historical precedent to the attack on New York City on September 11, because the destruction pattern to the building basically has no relationship to the truck bomb. There's a truck bomb of amfo, which is a mixture of fertilizer and fuel oil, that supposedly produced these blast pressures great enough to carve a huge crater out of this building. But when General Parton, who's an explosives expert, did an analysis, he found that the blast pressures from such a bomb weren't nearly great enough to produce the destruction of the reinforced concrete pillars that were considerable distances from the blast source. Moreover, there was a highly asymmetrical pattern in the damage, which is easily explained by pointing out that there were several unexploded bombs inside the building, and if those had exploded, they would have produced a more circular shape of damage. But since they weren't exploded, you have this very peculiar notch that's carved out of the building. The unexploded bombs in the building were documented. They were found by police that arrived on the site, and were widely reported on local television channels. Anchors reported over and over that unexploded bombs were discovered in the building, and yet, we never heard about that on national television. There was also a curious case of a policeman -- one of the first policemen who arrived on the scene, and probably one of the policemen who had discovered unexploded bombs -- who was going to be honored at some kind of event. And there was this curious case of him supposedly committing suicide, just a couple of days before this event that would honor him. So the suspicion is that he was about to spill the beans, and provide even more evidence that this was an inside job.

BF: Could you say a little bit about the other buildings in the World Trade Center? Within the World Trade Center proper, only the Twin Towers collapsed. How many other buildings were there, and what happened to them? The ones in the direct vicinity of the ...

JH: So, on the actual World Trade Center super-block -- that's the original World Trade Center minus Building Seven, which was across Vesey street to the North -- there were a total of six buildings. There were the Twin Towers, which were kind of central to this block, and then to the North you had eight-story Building Six, nine-story Building Five, and nine-story Building Four to the East. Then you had the Marriott hotel, which was maybe a twenty-story building, directly underneath the Twin Towers, to the West. The Twin Towers were surrounded by these low-rise buildings, and on September 11, of course, when the jets collided with the buildings, they severely damaged the tops of the Twin Towers, and there rained some debris on some of the other buildings. But when the Twin Towers collapsed, 56 and 102 minutes later in the case of the South and North Tower, thousands of tons of heavy steel, some from more than a thousand feet above these low-rise buildings, rained down on these buildings and just hammered them. And even then they didn't cause total collapse of any of these other buildings. Imagine, Building Three, the Marriott Hotel, received thousands of tons of steel, falling from first the South Tower, and then the North Tower, and it crushed large parts of the building. And in both cases, the building was able to stop the collapse that was caused by this crushing. It just crushed several stories and then it came to a halt. I just bring that point up because -- contrast that with the official story: that fifteen floors of the North Tower are supposed to have entirely crushed the rest of the building, after only falling one floor? But regarding the pattern of destruction, the Twin Towers were totally leveled, except for some fragments of the outer wall, in both cases, that remained

standing, a few floors high. But other than that they were totally leveled, and most of the debris fell outside of the footprints of either of the Towers, and the heavy debris landed on the adjacent low-rise buildings, and crushed large portions of them. And then Buildings Four, Five, and Six were ravaged by severe fires that went on for most of the afternoon. In contrast, Building Seven, the forty-seven story skyscraper that supposedly collapsed due to fires, only had relatively small fires. Meanwhile, these other low-rises had severe fires, flames leaping out of them, just totally gutted, by the action of first the crushing of the debris, and then by these severe, uncontrolled fires that raged for most of the afternoon.

BF: The point being that these other buildings did not collapse.

JH: Yeah. And they had far more stress than any of the skyscrapers. And note that skyscrapers have to be designed to withstand hurricanes, and withstand earthquakes. I imagine they are designed to withstand at least a seven magnitude earthquake. And like I said, fires have never leveled a steel-frame building, or even caused structural damage to a vertical column in any steel-framed high-rise in history. And yet, fire is blamed exclusively for leveling Building Seven, and primarily for leveling the two Twin Towers. And you had this severe structural damage, far more severe than the plane impacts, and severe, out of control fires that went on for hours in these low-rises, that didn't cause any kind of collapse in these buildings. And note that low-rises aren't built to nearly the strength specifications of a high-rise, because the forces are so much less, like wind forces in a hurricane type wind. Basically, if you look at the strength distribution in the building, the strength is proportional to the distance from the top of the building. So, like, in the Towers, the steel gets thicker and thicker as you go down the building, from the top to the ground. The steel gets thicker and thicker, because the forces get that much greater. Well, a low-rise building is like the very top of the tower. It has pretty thin beams, because they don't take that much force. So I think that when you realize what stresses and forces skyscrapers have to be designed to deal with, and the fact that normal engineering practice is to design any kind of large structure, like a bridge or a skyscraper, to withstand at least three times expected dynamic loads, and five times expected static loads. And by that I mean, if you were to fully load the building, and have standing-room-only crowds on all the floors, and then have other stresses like have a hurricane at the same time, it would have to be designed to withstand several times that amount of stress. And remember that September 11 wasn't even a particularly windy day. The only stress would have been the weight of the top of the building down, and the fires supposedly weakening the building, and that's supposed to have resulted in complete collapse, totally destroying one thousand vertical feet of intact structure, from the ground to the collision zone. That's supposed to have thoroughly destroyed all that structure -- that structure that was designed to withstand hurricanes -- at almost the same rate as a rock falling through the air from the height of the towers' roofs. It just makes no sense at all.

BF: I'm speaking with software engineer and research scientist Jim Hoffman. Today's show: "Your Eyes Don't Lie, Common Sense, Physics, and the World Trade Center Collapses". I'm Bonnie Faulkner. This is Guns and Butter.

How were the Twin Towers and World Trade Center Seven, which collapsed as well, how were they constructed? What kind of buildings?

JH: Well, there's a myth that the Twin Towers had a very peculiar type of architecture, and that's often blamed for their total collapse. Now, it's true that this design of the World Trade Center was rather unique at the time that they were constructed. That construction consists of a very strong core structure, that's a bundle of vertical columns that run the entire height

of the building, and then a palisade of columns around the outside of the building that is linked by various cross members and floors, to the core structure. So you have an outer tube, that's like the outer wall of the building, and then an inner core, and those stiffen each other, and it's a very effective system for bracing the buildings against the tremendous forces they have to survive in terms of hurricanes and earthquakes and things. And yet they provide a large open floor expanse area between the core and the outer walls, so it's nice for office space. At the time they were built, that was a rather unique design, but actually, most modern skyscrapers employ a similar design, where there's a strong core structure, then most of the other load-bearing columns are moved to the exterior of the building to provide uninterrupted space for a large part of the floor space on each floor. Building Seven, which was constructed about ten years after the Towers, also employed a similar construction. It had twenty-seven core columns and fifty-eight exterior columns, and large expanses of floor between the two. So, contrary to popular misconception, the Twin Towers were not of a particularly unusual construction by contemporary skyscraper standards, nor were they flimsily built, which is another thing we're supposed to believe in order to believe the official story. They did remarkably well when the planes hit them. I mean, when a 767 hit the North Tower, there was a sway of about ten feet according to some reports, but that wasn't enough to even be observable in videos. Those buildings stood solid as these huge jet rammed into them. And those buildings are designed to sway. All skyscrapers are designed to have some sway, and that's well within the range of what they experience in a strong storm.

BF: So these buildings were very sturdily constructed.

JH: Yeah, they had to be, because any skyscraper has to be able to survive earthquakes. Of course, maybe the Twin Towers, being in New York City, didn't have to experience anything more than a magnitude three earthquake, but I'm sure they had to be designed to withstand at least a magnitude seven earthquake, because earthquakes of that size are possible in that area. And, I believe they were rated to survive hurricane force winds, like 140 mile an hour winds. And they were specifically designed to withstand crashes of precisely the type that happened on September 11.

Another misconception is that the planes that hit the Twin Towers, being 767s, supposedly jumbo jets -- well, slightly wider bodied than other jets -- were not anticipated. But yet, if you look at the planes whose impact they were anticipated to survive, those planes were really about the same size as 767s. Because a 707-340, whose impact they were designed to survive, had a maximum takeoff weight of 328,000 pounds, comparing to 395,000 pounds for the 767-200. They had similar length; and actually the cruise speed of a 707-340 is considerably faster -- 607 versus 530 miles per hour. And since kinetic energy goes up with the square of the velocity, a typical impact of a 707, that it was designed to withstand, would actually have involved more force than the 767s that actually hit them. We heard a great deal about the fuel load from the planes -- supposedly the part that wasn't anticipated. A 707 has a fuel capacity of 23,000 gallons, versus 23,900 gallons for a 767. But note that the 767s were only carrying about 10,000 gallons at the time that they crashed into the Towers, because they were on transcontinental flights that were about 40 percent of their 7,000 mile ranges. But the assertion that the engineers who designed these signature buildings just somehow forgot about the fuel loads of a potential plane crash is just ludicrous. That's exactly what engineers are paid to do, is consider all the most unlikely possibilities that could happen. To think that they contemplated the crash of a 707, but they forgot to think about the fuel load? -- That's ludicrous.

So in both cases, the plane completely entered the building, and in the case of the South Tower, much of the plane exited the building; plus in the case of the South Tower, a lot of the fuel left the building, too. Note that the fireball in the South Tower was much more impressive than the fireball in the North Tower, because in the South Tower, the fireball broke out and continued in the direction the plane was going. It kind of broke out of the northeast part of the Tower, this huge, impressive fireball. The North Tower more completely absorbed the impact of the plane, and retained the plane and more of its fuel load inside of the building, which is, I think, why the fires were so much more severe in the North Tower. Whereas in the South Tower, perhaps half to two-thirds of the fuel spilled out and burned up in a few seconds in the atmosphere.

BF: So, on September 11, two buildings were hit by planes. The two towers. There were an additional four buildings in the World Trade Center that were not hit by planes and did not collapse, but were severely damaged in the collapse of the Twin Towers.

JH: And ravaged by severe fires. And then there was the final building, Building Seven, which had only insignificant fires, was not hit by an airplane, and was not hit by significant fallout from either of the Twin Towers, as is clearly evident when you look at the aerial photographs that show fallout pattern from the large-scale rubble of the North Tower, the closest of the two towers. That's the third building that totally collapsed. So even ignoring the history of fires in skyscrapers and steel buildings, and how no fire has ever destroyed a steel-frame building before, no matter how severe -- even ignoring all that and just looking at what happened in the World Trade Center Complex on September 11, it completely invalidates the story of what destroyed the Twin Towers and Building Seven.

BF: Let's take a look at World Trade Center Seven. It's a smaller building, and it's located across the street from the World Trade Center.

JH: That's right, it's directly north across Vesey street, and Building Six is between the North Tower, the nearer of the two Towers, and Building Seven. three hundred feet separate Building Seven from the nearest tower.

BF: Describe World Trade Center Seven. How tall is it, how many floors does it have, how was it constructed and what happened to it?

JH: Building Seven was 500 and something feet tall. It was a little less than half the height of the Twin Towers, but still a huge building and occupied an entire block. Let's see what's the floor area ... well, actually I don't even have that because my table about Building Seven says "no information available", which is typical of Building Seven because this building has been shrouded in secrecy. There is just so much about Building Seven that's not public, and even the FEMA's report on Building is extremely vague; even far more vague than the already vague description of the structure of the Twin Towers, which there is also this huge evidence vacuum around.

Because you would think that these buildings -- that were built with public money and whose collapses were the most deadly and poorly explained failures in world history -- would be the subject of intense public scrutiny. And yet the blueprints of these buildings are completely off limits to the public. They are not available, and all we get are a very vague description that FEMA releases in its report. And that description itself is very suspect because it doesn't account for of about 30 percent of the steel that supposedly went into the

towers. An anonymous author, who has done some of the pioneering work on the Twin Towers demolition, calculated the total steel in the Twin Towers based on FEMA's description and comes up that much short.

BF: So what about World Trade Center Seven? How was it constructed? It has a steel core, it's a tube-within-a-tube construction.

JH: It is, basically similar to the Twin Towers -- a tube within a tube construction. It's not square like the towers. It's a trapezoid. The footprint is a trapezoidal shape, so it has two parallel walls and then two kind of wedge-shaped walls. But other than that it is kind of similar like some of the other skyscrapers: it has a bundle of columns in the core, and it has a palisade of perimeter columns on the outside. Basically, the most common kind of skyscraper design in the world today. Very few skyscrapers these days are designed with just the kind of uniform lattice of columns like the Empire State Building has.

BF: Can you talk about who the tenants were in World Trade Seven, and I also understand that it was built over a multi-storied electrical sub-station.

JH: Yes, it straddled the Con-Edison electrical sub-station, which meant that actually Building Seven was of even more robust construction than a typical steel-framed skyscraper because it had to span some fairly large distances and over the sub-station. So it had particularly thick steel beams.

But in terms of the tenants, Building Seven is interesting because, whereas other buildings of the World Trade Center, such as the Twin Towers, had hundreds of tenants, the tenant list of Building Seven is pretty short and it's interesting that you can characterize the tenants as completely being either government agencies or financial institutions. Building Seven housed offices of the Internal Revenue Service, the Securities and Exchange Commission, the Secret Service, and Mayor Giuliani's Emergency Command Center. The financial institutions included Solomon Smith Barney. The whole list is only about twelve long. And in addition to those tenants, a New York Times article revealed that Building Seven also served as a secret CIA center. It was a CIA base of operations in New York City. So it's a very interesting list -- in particular, then-Mayor Rudolph Giuliani's Office of Emergency Management, which was housed in a fortified bunker on the twenty-third floor of this building. This bunker had an independent air and water supply, had bullet- and blast-resistant glass, and overlooked the Twin Towers. It was built in 1998, long after the first alleged terrorist attack -- the 1993 bombing of the Twin Towers. So this was the ideal location in which to manage the response to the emergency of the September 11th attack, and yet Mayor Rudolph Giuliani apparently didn't even go to Building Seven on September 11th, but rather set up makeshift headquarters on Barclay Street even before the first of the towers collapsed.

BF: Is it true that this bunker on the 23rd floor had its only air, water and fuel supply?

JH: Yeah and fuel supply too. Because this whole building, I believe, was designed to be independent. There were large diesel fuel storage tanks. There was one on the seventh floor and there was one on the second, and then there were large underground tanks that held 70,000 gallons of diesel fuel so that this whole building could be run, or at least large portions of it could be run, independently of the power grid. And certainly this bunker was a very survivable location in the event of a terrorist attack and yet it was abandoned on

September 11th, supposedly.

BF: So could you tell us what happened to World Trade Center Seven? What happened to it on September 11th?

JH: Well, World Trade Center Seven was evacuated even before the first of the tower collapses. And then there were small fires that were observed in just basically about two locations on this building. They were both far down on the building. One was on the sixth floor and one was maybe on the twentieth. But just two areas of fire and these two areas themselves just looked contrived. They just burned consistently for a long period of time as if diesel was being delivered to them or something. They didn't spread. They just stayed localized to one small section of the floor in either case. And furthermore, the New York City Fire Department was ordered to not fight the fires in Building Seven, which is itself is very curious because no steel-framed building had never collapsed from fires before. Well I guess we have the North and South Tower collapses and I guess now all steel-framed buildings are suspect when they're on fire so therefore we're not going to fight any more fires in high-rise buildings? Well, I don't know, I guess that's their rationale for abandoning Building Seven and allowing it to burn. But even after abandoning it and allowing it to burn there are still just these small areas of fire that burned for a good part of the afternoon. Meanwhile, the north facade of this building, as evident from photos, showed not even any sign of damage, and there is no evidence that other parts of this building were damaged. And yet, with the only explaining cause being these small localized fires, the building underwent a total systematic vertical collapse at 5:20 in the afternoon, falling straight into its footprint in a motion that was so smooth and quick that the building entirely reached the ground in only a fraction of a second longer than it would have taken a brick dropped in a vacuum from the height of the building's roof. So virtually all the resistance in this building had to be destroyed, throughout the building -- not just in one part of the building but throughout the building -- in order to allow it to collapse so quickly. So you have the first case in history of the total collapse of a steel-framed skyscraper, or steel-framed high-rise for that matter, blamed on fire, and there is just no precedent for it.

BF: Did the building essentially turn to powder?

JH: Well, not to the degree that the Twin Towers did. If you look at the rubble around the Twin Towers, those buildings were shredded. There weren't any steel assemblies more than about thirty feet long that were left. I mean even the core columns -- those continuous steel columns that were a yard wide and ran the height of the building -- those were just chopped up into no more than 30 feet long sections that could be easily loaded onto the equipment that was cleaning up Ground Zero. Meanwhile Building Seven had much larger assemblies and it looked more like a classic demolition where there were fairly extensive portions of the outer wall that were still intact but were kind of folded in and lying on top of the building. There was a lot of dust produced in the collapse of Building Seven and I haven't been able to find enough photographs to document what the size of that dust cloud was relative to the Twin Towers. But it looks to me like it was a much less energetic event than what took place in the towers. And whereas the tower collapses exhibited that such thorough pulverization high in the air, you didn't see anything like that happening in World Trade Center Seven. It just sank into its footprint and a growing cloud of dust. It wasn't the top-down explosive demolition that we saw in the case of the Twin Towers.

BF: I'm speaking with software engineer and research scientist Jim Hoffman. Today's show, Your Eyes Don't Lie, Common Sense, Physics and the World Trade Center Collapses. I'm

Bonnie Faulkner. This is Guns and Butter.

So would you describe the collapse of World Trade Center Seven as an implosion or a controlled demolition? Is that what it looks like?

JH: Well, the controlled demolition is a conclusion. But the description as an implosion is certainly accurate, because an implosion means that the building falls into itself rather than blowing out. And that's exactly what a controlled demolition seeks to achieve through precise engineering, because it's not an easy task to bring a structure -- especially a steel-framed structure -- down into its footprint neatly, because steel is a very resilient material and if you destroy some part of it, the structural integrity of the rest of it remains. So if you like destroyed the bottom of the building it would topple over. If you destroyed part of it and it was enough to cause some kind of collapse, again it would go to one side or the other and fall on adjacent real estate. So that's what only a few companies in the world specialize in doing -- the controlled demolition of such large structures. It takes considerable expertise to place all those explosives all around the building, on every single column and up to through various levels in the building, and to precisely control the order in which those explosives are detonated so as to prevent an asymmetry of the destruction that would cause the building to topple from one side to the other. No random event such as a single explosion, a fuel tank explosion, or whatever you want to postulate, could possibly cause such a tall structure as Building Seven, which was five times as high as it was deep, to fall and fold directly into itself.

BF: How long did it take the building to collapse?

JH: Well, it's apparent from videos of the building that it only took about 6.5 seconds for the process to go from the building being intact to being just a pile of rubble. Six point five seconds. You can easily calculate the time it would take an object falling in a vacuum to fall from the roof of that building to the ground, and that time is 5.92 seconds. So it's just a fraction of a second faster that it would take for an object encountering no resistance to fall that distance.

BF: Where could people see pictures, videos of the collapse of World Trade Center Seven?

JH: Well, I recommend my site, which is wtc7.net that's as in World Trade Center Seven. So it's the initials W T C and the numeral seven, dot net; and if you go to that site and go to the contents, you'll find the videos. There are three videos which are just ... They say a picture is worth a thousand words. These videos are worth millions of words because they so clearly show what happened. This is a real eye opener if you haven't seen Building Seven. Building Seven was something I had only heard about on September 11th. I thought it was a low-rise. I thought it was right underneath the towers or something. I had no idea what this was really like. But this is a building all by itself completely intact and just, boom -- it just turns into rubble in 6.5 seconds. But also on the matter of looking at the evidence -- that's one site, but I've also attempted to collect every bit of evidence I can get my hands on, in terms of photos and videos, of the collapse of the Twin Towers. And if you go to wtc7.net, which is kind of like a front door, and you go to hosted sites, you will find my much more extensive research site called 911research.wtc7.net. It has a whole section under the evidence section and has videos and photographs of the destruction of the Twin Towers. And I can't emphasize too much how important it is to go back and look at the actual photographs, because, as I said earlier, my own experience was that when I saw those images the second time after I got interested in researching what really happened, early in

2003, I had a completely different understanding of the photographs. It's as though I didn't even see what happened on September 11th, because the numbing and the shock of what happened just blocked out -- it just caused this negative hallucination where I didn't even comprehend what I was seeing. It's like I didn't even see the dust that was spewing out of the Twin Towers from early in those collapses.

BF: What explanations or theories have been put out to explain what happened on September 11th in terms of collapse of the towers?

JH: Well, we were actually subjected to a series of explanations that started with ones that were really completely ludicrous, and then got progressively more sophisticated as the need arose to sell these to the American public, as people looked at them a little more. So on the day of the collapses we were treated to what I call the "killer fires" or "core meltdown" theory, in which, supposedly, the fires were so unimaginably intense that they generated the power of nuclear power plants, and they melted the steel inside the buildings; and we heard alleged structural engineers spouting this kind of stuff. Chris Weis was quoted on the BBC saying: "It was the fire that killed the buildings that they couldn't possibly survive those fires." And this is just nonsense because the melting point of steel is 1535 degrees Celsius. That is almost double the Celsius temperature of the highest temperature you can achieve by burning hydrocarbons in the atmosphere without pressurizing or preheating the air. In other words, a random fire like a building fire is probably never going to get much above 800 degrees Celsius because you need to have systematic way of pressurizing the air and preheating it, like you do in a blast furnace, to achieve temperatures much above that. And note that hydrocarbon flames above 800 degrees are usually of the premixed variety, in which air and fuels are mixed in the optimal ratio before combustion, such as you have in a gas stove. The kind of flames you have in buildings are called diffuse flames, which are orange and not blue; and those are hundreds of degrees cooler than premixed flames. So the temperatures would be nowhere near hot enough to melt the steel. It's simply ludicrous.

Within two days of the attack, however, another theory was advanced called the column failure theory, and that was endorsed by a paper, which, amazingly, was published just two days after the attack. Authors Bazant and Zhou use this kind of abstract mathematical theory called elastic dynamic analysis to confidentially proclaim that "the structural resistance was found to be an order of magnitude less than necessary for survival." My reading of this paper is that these people don't even have a clue about how these buildings were constructed. Nowhere in the paper is it apparent that they even knew how many columns were in the building or anything about the construction of the building, other than they were "framed tubes." It's just this completely abstract theory that has no evidence of applicability to the actual situation, but even then they admit that their scenario requires that all of the columns on a single floor of the towers would have to be heated to 800 degrees Celsius. Is that possible? Not if you consider that if the columns were even to reach a temperature of about 700 degrees Celsius they would start to glow noticeably red even in broad daylight, and there would be ongoing window breakage and have big emergent flames, and the smoke would be a light color rather than the dark sooty color we saw on September 11th. So clearly those features weren't observed. But even more to the point, if you look at how hot steel columns have ever gotten in an actual building fire situation, based on actual studies of it, you'd see that they could get nowhere near hot enough, and that has to do with the properties of steel, which has a very high thermal conductivity, allowing it to soak away the heat. The steel in these buildings is very well connected to thousands of tons of steel and if you pour heat on to one portion of it, it will simply conduct the heat away. So it's very hard to get columns in such a building heated up anywhere near

the temperatures of the actual fires. A company, Corus Construction, conducted extensive fire tests in steel-framed car parks, which were uninsulated, in multiple countries, and measured the temperatures on the steel frames throughout these structures for the duration of these fires, which went on for hours, and the highest temperature they recorded in any of these tests was a mere 360 degrees Celsius. Now, at 360 degrees Celsius structural steel only loses about one percent of its strength. So, the column failure theory just makes no sense whatsoever, even though it was endorsed by the owner's insurance claim investigation.

So this theory was good enough for the insurance company, I guess, but it wasn't good enough for the American people who would need something slightly less implausible, and that's how we got the truss failure theory, which was presented in the form of popular science programs on NOVA and the Discovery Channel. And the idea of this theory is that, well we couldn't see the columns glowing red hot outside the building but maybe those steel trusses that underlay the floors -- these floor diaphragms that span the distance between the bundle of core columns and the palisade of perimeter columns -- were heated up to such an extent that they sagged, and then you had some sort of domino-effect collapse of these floor diaphragms one on another and it just built on itself and the floors just pancaked down, and that was supposed to lead to this total collapse scenario, destroying the outer wall and the core columns of these buildings.

This scenario of sequential chain reactions of failures is made more palatable through several clever deceptions, such as depicting the trusses as parallel while omitting the cross-trusses interwoven at right angles, or mis-describing the steel shelves that supported the truss ends as "angle brackets". But even if you believe all this stuff about these floor diaphragms collapsing it doesn't begin to explain the total building collapse because what you'd have is these four diaphragms, which are sort of like rings that extend all the way around the core and out to the exterior wall, would simply pancake down around the core columns like records falling down on a spindle, leaving both the core structure and the outer wall intact -- no total collapse. The unsupported or unbraced height of these core columns and the exterior columns is supposed to make them un-survivable. They're supposed to buckle or something because they aren't braced by the floor diaphragms, but the floor diaphragms weren't even a major structural component of these buildings. These were not free-standing columns as we were led to believe, rather they were abundantly cross-braced. The outer wall columns -- every floor had four-foot-high spandrel plate that stitched together the columns all the way around the building -- and the interior columns were abundantly cross-braced into a dense and robust bundle of columns that were entirely self-supporting. The failure of the flooring system would have in no way led to complete collapse of these buildings. NOVA, the people who presented this theory to the American people, used a number of deceptive techniques to make this theory seem more believable, as did FEMA, the government agency that would later endorse this theory and present it as the official government story. The key deception of FEMA's representation of this theory is to minimize and even conceal the existence of the towers' structural cores -- the strongest element of these buildings. They used deceptive illustrations and they used diagrams in which the core columns don't even look like columns; they're depicted as toothpick-like structures, and they misrepresent the cores of these buildings as being merely "service cores" that have the elevators and stairs and the bathrooms and stuff. They don't talk about the structural aspect of the cores. They don't call them core structures; they call them the "service cores." If you actually look at photographs of the towers being constructed you can see just how robust these core structures were. The core columns were box columns measuring 16 by 36 inches, fabricated of steel four inches thick at their bases. There were

47 of these and they had all kinds of horizontal bracing against each other and even diagonal bracing on the outer clusters of columns in this large core structure that was about 100 feet on a side.

BF: I am speaking with software engineer and research scientist Jim Hoffman. Today's show, Your Eyes Don't Lie, Common Sense, Physics and the World Trade Center Collapses. I'm Bonnie Faulkner. This is Guns and Butter.

So there were three explanations put out soon after the collapses that you are saying none of them hold water.

JH: Right.

BF: Number one that the core melted down, the steel core melted down.

JH: Yeah. The first is physically impossible. The second is basically physically impossible too because ...

BF: The second is what? That the columns collapsed?

JH: Yeah. The columns are supposed to have collapsed because all the columns on a single floor were supposedly heated to about 800 degrees Celsius, which is four to five hundred degrees higher than temperatures that have been recorded in prolonged tests of hydrocarbon fires on steel structures -- uninsulated steel structures.

BF: And in the third explanation with the truss failure -- and that's the theory or explanation that FEMA is putting out?

JH: Well, that's the one that FEMA adopted. I'm not sure of the actual origin of it. One of its most enthusiastic spokespersons is Professor Thomas Eagar, a materials science professor at MIT, who used all kinds of analogies like zippers and dominoes to describe the construction of these buildings, as if buildings are designed to just rip themselves apart if something happens to compromise some part of the building.

I'd like to read a quote from Eagar because it's just so ludicrous. He suggested the towers were only designed to survive trash can fires. This is an interview that is on the NOVA website. "If it only occurred in one little corner such as a trash can caught on fire you might have had to repair that corner but the whole building wouldn't have come crashing down. The problem was that it was such a widely distributed fire and then you've got this domino affect." So I attribute the domino effect and zipper effect -- which is how Eagar describes the chain reaction of trusses failing, it "unzips around the building" -- those are the words he uses -- to Eagar. Even though in both cases the fires didn't even cover an entire floor of either building. Especially in the South Tower, where the fires remained completely isolated to the southeast side of the building and never even extended over to the other side. So you're supposed to have this chain reaction of unzipping of the trusses around the building? In the illustrations they omit the cross bracing and they represent the core as a series of slabs. It's almost like these are hypnotic suggestions that the building is just waiting to pancake.

BF: You're talking about the Twin Towers.

JH: Yeah. Because interestingly, you know, we've been talking about the Twin Towers and Building Seven, but the Twin Towers have been the subject of these very extensive media campaigns to convince people of what happened -- very expensive productions, with these illustrations and animations that make these collapses look very clean. They do away with the dust and show chain reactions that look plausible enough, if you don't think critically. So a lot of attention was paid to the Twin Towers but Building Seven has just been the subject of almost complete silence. Because since people don't even remember Building Seven, there has been no need for a large public relations campaign to convince people of the official explanation.

BF: To your knowledge is there any ongoing investigation of the physical evidence from September 11th?

JH: There have been some noises from NIST -- that's National Institute for Standards and Technology -- and I think they still have an ongoing investigation. They've been requesting evidence about it. So it is not clear where that investigation is going though. It appears that their investigation is taking place strictly within the confines of the official story. In other words they're going to come out with some recommendations for some additional fireproofing or something like that. I don't have any hope really that they're conducting a serious investigation, although I think it's probably worth pressuring them and sending them evidence.

BF: So the only official report from the government on an investigation of the physical evidence of September 11th is a report put out by FEMA, and just very briefly what does the FEMA report claim? Does it come up with an explanation?

JH: Well, the FEMA Report has a number of chapters and it covers the North and South Tower in one chapter and covers Building Seven in another chapter. We've talked about Building Seven and how, if you read the report, they contend that they're clueless about what happened to Building Seven because they say that the most likely scenario has "a low probability of occurring" -- very legalistic language. They clearly don't buy the official story but they clearly won't consider the only reasonable alternative, which is demolition. So the chapter on Building Seven is just kind of a sick joke.

Now, in the chapter on the Twin Towers, they give a sort of cartoon explanation of the truss failure chain-reaction scenario leading to the floor collapses, and they provide one short paragraph that ostensibly explains how the perimeter walls and core structures vanished once the floors fell away. It's clear that they don't believe this either because the entire collapse scenario hinges on the "un-supported span of possibly free standing core columns". By qualifying "free standing" as "possibly," the report writers may shield themselves from legal repercussions, since they knew full well the core columns were anything but free-standing. Furthermore they describe the collapse scenario in some detail only for the North Tower: the second tower to collapse, the one that had the more severe fires, and the one that had the direct hit from the airplane. They then gloss over the South Tower by pretending the scenario applies equally. They don't disclose the fact that the fuselage of the South Tower clearly didn't take out much of the core structure of the building.

But what's really interesting about the FEMA Report is that it's really an exercise in deception, because we talked a little bit about how the whole truss failure scenario is basically a deception to try to make you think about the first few events of the collapse but then kind of gloss over the rest of it. They present a complicated scenario -- you have an

almost nominally plausible first set of events, but by the time you get to how the palisade of perimeter columns and the core structure is supposed to have self-destructed, they provide only a few short paragraphs that appear carefully worded to avoid outright lying. You're supposed to kind of infer that or just imagine it or something. But what's really the primary deception in FEMA's report is to make you think that the core columns didn't even exist. And they did that in a number of ways. They have these cute illustrations that appear to show a cross-section of the entire building, from one perimeter wall to the opposite one, making it look like the trusses span the entire building. But if you read the fine print, you will see the illustration depicts the span between perimeter wall and core. And then they have other places where they describe the core of the building as the "service core" when they're talking about elevators and bathrooms and stuff like that. They don't talk much about the 47 steel box columns, a yard on a side, fabricated of steel four inches thick at their bases; nor about the cross-bracing that bound them together. Rather, they have these illustrations where they depict these core columns as these little tiny toothpick-like columns that are a fraction of their actual dimensions, and not a hint of their cross-bracing. Because these core structures weren't just a series of vertical columns; rather they were steel lattices, where you have these huge continuous core columns running the entire height of the building, and then you have large beams that cross-brace these columns, and even diagonal trusses that triangulate the outer bundles of four columns on each of the corners of the core structure. So it's a highly robust structure. Clearly the core itself would have been able to withstand hurricane force winds if it just stood by itself, and yet, FEMA is hoping that we will believe that the core just self-destructed when the floor diaphragms surrounding them fell away.

BF: Is there anything else that you have investigated about the events of 9/11 in terms of the physical evidence that you would like to talk about?

JH: My focus has been on the events in Manhattan because I think it's really shocking the silence that we've seen around that. Even with investigators who talk about other aspects of 9/11, such as the various impossibilities of the hijacker scenario, the various competing theories about the Pentagon attack, and so forth, but meanwhile it seems very clear to a lot of people what happened in Manhattan, and yet there's this surprising, I think, silence even among the skeptics to really take on what happened and really call this a demolition and really expose it. Because what I emphasize is that this event in Manhattan was the core target of 9/11. It was the core of the psychological assault of the attack, and it was the event that really shocked people. I mean the Pentagon was shocking in that what you would think be the most heavily defended building in the United States, or in the world for that that matter, was only eleven miles from Andrews Air Force Base with two combat-ready fighter wings, was hit almost an hour and a half after the crisis began and they couldn't even get up an interceptor to protect the Pentagon. I mean that's pretty shocking. But note that the Pentagon attack happened before the first of the tower collapses, so I think if you consider the whole event from the point of view of a psychologically engineered attack in order to shock people and to make people feel disempowered and to make people feel afraid and sign off on whatever the government wants to do in terms of international aggression or whatever. The core of this whole event is Manhattan that's where more than ten times as many people died, in Manhattan, than in the other two parts of the crime scene: like in Washington, D.C. and in the crash field in Pennsylvania.

BF: I've been speaking with Jim Hoffman. Jim Hoffman has been researching the World Trade Center collapses since February 2003 and has created an extensive website reporting his investigations and other aspects of the September 11th attacks. He can be contacted by

e-mail at Jim@wtc7.net. Visit his website at www.wtc7.net.

Guns and Butter is edited and produced by Yarrow Mahko and me, Bonnie Faulkner. To leave comments or order copies of our shows call 510-848-6767 extension 628. Email us at Faulkner@GunsAndButter.net or visit our website www.GunsAndButter.net.

Part 2

Bonnie Faulkner: This is Guns and Butter.

Jim Hoffman: If you've considered that 911 was a psychological operation: that it was designed to traumatize people and to prevent people from discovering the truth, then the very means that they look for to accomplish the attack are the ones that will simply have a high unbelievability factor around. So, when you talk of high-energy weapons it just sounds, it just sounds like science fiction.

BF: I'm Bonnie Faulkner. Today on Guns and Butter, Jim Hoffman. Today's show, "Your Eyes don't lie. Common Sense, Physics and the World Trades Center Collapses", Part Two.

Jim Hoffman is a software engineer and research scientist. His work in applying scientific visualization to mathematics was instrumental in the discovery of the first new examples of complete embedded minimal surfaces in over one hundred years. His work was featured in articles in *Science News*, *Scientific American*, *Science Digest* and *Nature*. He discovered new three-dimensional morphologies for modeling block co-polymers -- systems used in a kind of nanotechnology -- and co-authored papers in *Science* and *Macromolecules*. He collaborated in the development of new inventions in combustion engineering and is co-author of a patent for an internal combustion engine with increased thermal efficiency. Jim Hoffman has been researching the World Trade Center collapses since February of 2003 and has created an extensive website reporting his investigations and other aspects of the September 11th attack, at www.wtc7.net. He uses common sense and physics to analyze the collapse of the World Trade Center.

BF: Now, Jim, you have described the collapse of World Trade Center Seven as an implosion. But when you talk about the Twin Towers, the North Tower, the South Tower, you have described their collapse as an explosion. Let's look at the Twin Towers. Which tower collapsed ... well, first of all, a plane hit each of those towers, right?

JH: Yes.

BF: Which tower collapsed first?

JH: Now, the South Tower collapsed first, but the South Tower was the second to be hit, and it collapsed first, even though it was damaged far less than the North Tower, and the fires were far less severe. The South Tower collapsed after only 56 minutes, whereas the North Tower lasted 102 minutes before it totally collapsed.

BF: Now, is the South Tower the tower where the plane sort of went through the corner of it?

JH: That's correct. It was an indirect blow. The North Tower impact was centered at about

the 96th floor and that could have caused some damage to the core of the building. Whereas the South Tower impact was offset about 30 feet left of the center of the south face and the plane was angling left that you could actually see the fuselage emerging from the opposite corner of the building; and if you plot the trajectory of the plane through the tower you see that it almost entirely misses the core structure of the building. So not only did this building only have about ten or eleven percent of its perimeter broken by the impacting jet, it probably had almost all of its core structure intact, and it had fires that were so oxygen-starved that there were emitting black smoke. Recordings of communications from firefighters who were high in this building show they had a plan to put out this fire. They weren't even particularly concerned, or there was no sign of panic or anything; and that's when the tower came down, just as this fire seemed to be smoldering out.

No steel-framed building has ever collapsed due to fires, however severe. Steel-framed buildings have been in use for over a hundred years and there are numerous examples of severe fires in such buildings that have raged out of control for numerous hours -- far more severe than any of the fires in the three skyscrapers in Manhattan on September 11th -- the Twin Towers and Building Seven. Examples include the 1991 One Meridian Plaza fire in Philadelphia, which raged for eighteen hours and gutted eight floors of this thirty-eight-floor building. This fire didn't damage the vertical columns in this building, nor did the 1998 First Interstate Bank building fire in Los Angeles damage any of the critical structural elements of this building. In fact, Iklim, a company that specializes in analyzing damage to buildings in fires, concluded that none of the columns in this building were even damaged by this fire that lasted for several hours and gutted several floors. So, it's just the nature of steel that the structure of these buildings isn't compromised by fires. It has to do with the melting point of steel, with the temperatures that you have to elevate steel to before it loses most of its strength, and the fact that steel has high thermal conductivity. And because the steel structure of these buildings is highly linked -- that is there is large continuous spans of steel -- these steel columns are long continuous pieces of metal that if heat is delivered to one part of it, it quickly conducts the heat away. And even though you can have fires in buildings that locally can reach temperatures of as high as eight or nine hundred degrees Celsius, momentarily, the temperatures that the steel structures in these buildings can reach is considerably lower. In fact Corus Construction Company conducted extensive tests in multiple countries in which steel-framed car parks -- and these were uninsulated structures -- were subjected to prolonged hydrocarbon fuel fires going on for hours. They recorded the temperatures in the steel beams and columns in these buildings and the highest temperature they recorded in any of these tests was 360 degrees Celsius. At 360 Celsius structural steel only loses about one percent of its strength.

BF: So the South Tower collapsed first but it was hit by a plane second.

JH: That's right. Getting back to what you were asking about the explosion versus the implosion. Now an implosion, as it implies, consists of a building falling into its footprint and it not falling outwards but falling inwards. And there's some smoke and dust, but it falls very neatly into its footprint. I describe the collapse of the Twin Towers as *explosions* because clearly what happened. Again, just go to web and look at the videos of this: there are a number of videos that show very clearly what these events looked like. These towers mushroomed into vast clouds of dust -- clouds of pulverized concrete that were already growing to vast size before they even got very far down the buildings. In both cases these exploding tops -- and the clouds of pulverized material were growing at a rate of about fifty feet per second and they were just consuming the towers as they descended -- in both cases they grew to about three times the diameter of the towers within five seconds, and five

times the diameter of each tower by the time they reached the ground at around thirteen seconds.

BF: Well, Jim, that brings me to an article that you wrote called "The North Tower's Dust Cloud: Analysis of energy requirements for the expansion of the dust cloud following the collapse of One World Trade Center". You have written that it would require a lot of energy to bring the building down and form the gray dust clouds, that it does form, I believe you refer to them as pyroclastic clouds.

JH: Right. Let me start with just kind of a narrative of the nature of these events. It's similar in both the North and South Tower. The South Tower is just a little bit different in that you can see the top of the South Tower tip. There was a larger portion of the South Tower above the crash zone than the North Tower -- there were about thirty stories above the crash zone in the South Tower. So it started to tip, and that looks sorta, you know, that's sort of realistic and that's what you expect, if a building falls down it would tip from the region of damage, like, and topple like a tree. But if you watch the South Tower it starts to tip, but then it stops tipping and then the whole top of the building just basically disintegrates and then starts exploding into this cloud of dust. Now in both cases, we see the production of this thick pulverized concrete dust. These opaque clouds of dust start to puff out of the building very early in the event, like within two seconds you see large volumes of dust exuding from the building and expanding rapidly. You also see what are known as squibs, which are high velocity gas ejections, occurring well below this zone of complete destruction. You see these jets emerge out of a speed of over two hundred feet per second, and that's a characteristic feature of explosive demolitions. You have these very high velocity jets that are only seen in explosive detonations.

Now, in terms of the nature of these events -- which are often described as explosions, or I describe them as explosive disintegrations or something in those terms -- it is essential that these weren't discrete explosions. Although there is some evidence that there were some localized small explosions, on the whole the events were smooth waves. There is video of it that has a sound track that you can hear. It sounds almost like an ocean wave. It's just kind of a roar -- a white noise or pink noise, that is very continuous. So, I think that's one of the reasons people tend to discount the notion of demolition because they think, "Well, if there were explosions I would have heard discrete explosions." Well, for the most part there weren't discrete explosions; there were these continuous explosions in both cases that lasted for about fifteen seconds. It took, depending on what part of this huge cloud that's consuming this building whose travel to the ground you look at, it took about twelve to fifteen to sixteen seconds for the destruction to travel and completely reach the ground.

Now this dense cloud of dust that these buildings were being converted into in mid-air -- it started very early in these events -- we often talk about as a pyroclastic cloud. That's a term from vulcanology that describes a dense suspension of solids in air or some fluid that behaves almost as a separate fluid. It expands and doesn't mix very much with the surrounding air. It's not like smoke cloud such as the smoke clouds rising from the towers. These pyroclastic clouds that had all this pulverized material were traveling down; they were pulled by gravity. They were very dense, but they remained distinct from the surrounding air and they continued to expand. In this paper you're referring to, I examined the cloud from the North Tower which continued to expand even after the tower reached the ground, and continued to remain distinct -- very distinct boundaries, very opaque -- and it just raced down the streets at about thirty miles an hour. There is a photograph that's in the FEMA report that's taken from about thirty seconds after the initiation of the North Tower

collapse in which I was able to estimate the volume of the cloud by measuring numerous sample points on the frontier of the dust cloud. I made a conservative estimate of the volume of the cloud. It is about five times the volume of the original building. Now, even in controlled demolitions the amount of explosive charges isn't so great and you tend to get a lot of dust with a controlled demolition, but it's usually not much larger than the size of the original building. Because -- think about it -- where did all this material come from? It was gases and solids inside the original building. In a typical demolition the resulting dust cloud is just a little bit larger than the intact building, since there is some mixing with the ambient air. So, in my paper I first make this estimate of a fivefold expansion, and then I reduce it to account for mixing. I assume there is probably some mixing with the surrounding air even though I don't think very much because as I said this pyroclastic cloud is behaving as its own fluid and it's so much denser than the surrounding air that it doesn't mix -- at least in the early part of this event -- it takes several minutes before it gets more diffuse. So, given an allowance for mixing, I reduce my expansion estimate to 3.5 times the original volume. And to achieve that level of expansion there are, if you discount the notion of explosives, two ways you could achieve that expansion. Now explosives could turn a lot of solid matter into gaseous phase molecules thereby introducing more gases in the form of the products of the explosives, and that could account for some expansion, but ignoring that possibility, I see really only two ways to achieve the expansion:

The first way is through thermodynamic expansion of the gases, such as air, that makes up the cloud. The ideal gas law says that the volume of a gas subject to constant pressure is directly proportional to its absolute temperature. So there is an easy calculation you can make about the amount of energy that is required to achieve a given amount of expansion by this means.

The other cause of the expansion is the conversion of water from liquid to steam. There are a number of sources of water in the buildings, like in the plumbing system, maybe in cisterns, various things. When water is vaporized, and that only requires raising it to the boiling point of water, a lot of energy is required but it expands it greatly, because the expansion ratio of liquid water to steam is 1 to 1800.

Now, based on which of those two factors is dominant, I get different estimates of the total amount of energy required to achieve the expansion. But in both cases it's far greater the available energy from the elevated mass of the building -- the gravitational potential energy, which is on the order of 111,000 kilowatt-hours. The estimate that I get by ignoring water vaporization and only looking at the thermodynamic expansion of the gases is about 400,000 kilowatt-hours, already almost four times the gravitational energy budget. But then if you factor in the fact that you would also have to heat up all of the suspended materials in the cloud because the heat would exchange between the gases and the suspended solids, and depending on what your estimate is of the amount of solids at that thirty-second mark, it could be as great as eleven million kilowatt-hours of energy. Okay, so that's the one calculation. The other calculation is just looking at water vaporization and assuming that it is not supply-limited, that there is enough water to soak up all the heat that's there to produce the amount of expansion. Using that estimate I get 1.4 million kilowatt hours, which is more than ten times as great as the gravitational energy.

So there is huge imbalance between the amount of energy required to drive the heat sink of dust cloud expansion, and the gravitational energy available in the elevated mass of the building -- supposedly the source that was driving all this destruction.

And understand that the vast majority of gravitational energy could not be converted into heat energy where it was needed to expand the dust cloud. Because most of the mass of the buildings was falling outside the buildings' footprints, by the time it reached the ground its kinetic energy would have been dissipated into ground shaking or something else. It's doubtful that even a small percentage of the gravitational energy could have been converted into heat during the collapse to drive the dust cloud expansion.

Also note that this calculation based on dust cloud volume does not account for the energy required to pulverize all that concrete, which is itself a huge energy sink. An estimate of the amount of energy required just to pulverize the concrete, the concrete being the approximately four-inch-thick floor slabs that were on all the floors throughout the buildings -- that was really the only concrete in these 100 percent steel-framed buildings -- was 135,000 kilowatt hours, which is already more than the gravitational energy budget.

BF: Could you explain what an energy sink is and then -- it sounds to me that what you are saying is that the size of the dust clouds were so large that that means that a tremendous amount of energy went into creating these clouds. Is that what you're saying?

JH: That's right.

BF: You're basing it on the size of the dust clouds.

JH: Right. Right.

BF: I see.

JH: An energy sink is just a way of thinking about energy flows, where you have source and a sink. If you have a given form of energy, the sources have to account for the sinks. So you have to have enough energy in the sources to satisfy the sinks. If we're talking about say, heat energy, the heat had to come from somewhere, and then if it gets used up into something, it went somewhere. So, energy can get converted from one form to another, but to look at any given stage in that you can talk about the sources and the sinks, and the sources of energy have to be sufficient to drive the sinks. The energy is coming from the source and it's being used by the sink. So it's just a way of looking at how the energy balances out.

BF: So the sink is what the energy is being converted into.

JH: Yeah. Right. Exactly.

BF: From solid concrete to a dust cloud, let's say.

JH: Well, let's see. So if you're talking about the pulverization. Pulverization would be an energy sink. Because you could have heat energy that's being converted to, say, evaporating water in the concrete -- there is residual water in concrete -- and then that's being converted to the mechanical energy of exploding the concrete and converting it to fine powder.

Now getting back to the nature of these events, it's very striking that all of that concrete in these buildings -- and there was ninety thousand tons of concrete in each building or something like that -- was thoroughly pulverized in both towers. The evidence at Ground

Zero, if you study the photographs and if you talk to people that were at Ground Zero, indicates there were virtually no large chunks of concrete or even gravel or chunks of any size. It was just fine powder and it blanketed lower Manhattan, and it's just striking how thorough the conversion of these buildings into dust was. The only parts of these buildings that survived in any recognizable form at all, was the structural steel, and all that was chopped up into pretty small pieces. Virtually all the solid non-metallic parts of these buildings were converted to fine dust. The windows in these buildings were completely pulverized. There weren't piles of shards of glass anywhere. Those windows were just completely turned to microscopic particles. Same for the gypsum in the buildings and all the floor slabs. They were just thoroughly pulverized.

BF: I have read that molten steel was observed in pits below the Twin Towers up to a month or more after the collapse. And also I believe, you had mentioned to me that some of the steel was melted to the point where it draped over the ruins.

JH: Let's talk about some of the molten steel first. It took months to excavate the sites because these buildings -- the Twin Towers and some of the other buildings in the World Trade Center Complex -- were on top of a deep sub-basement. It was seven stories deep. It was this huge foundation containing all kinds of subterranean roads and subways and stuff. The rubble pile was only a couple of stories high but it filled portions of this sub basement. The excavation wasn't complete until several months after the attack, around April of 2002 - - even at the accelerated rate at which this excavation was being done. It was expected to take over a year and took only eight months. When they got to the bottom they discovered that there were large pools of previously molten steel, according to some of the presidents of the companies that were contracted to clean up Ground Zero. Steve Tully of Tully Construction and Mark Loizeaux of Controlled Demolition, Inc. both reported that there were large pools of molten steel. Now it's just completely implausible that any kind of hydrocarbon fire could have produced the necessary temperatures, let alone concentrated the temperatures in such a way as to melt large amounts of steel. We've talked a little bit before about the fire temperatures possible with hydrocarbons versus the melting point of steel. So there's evidence of a huge energy deficit here not only in the rubble fires, which continued to burn, but the previous molten steel that was discovered months later at the foundations.

Now, whereas non-metallic solids in the buildings were, for the most part, pulverized to microscopic particles, with the curious exception of the paper -- I mean there papers littered everywhere amongst all this fine powder that the windows and the concrete and gypsum and even various hydrocarbons that were distributed all over lower Manhattan -- the only parts that survived in any sizable pieces were the structural steel of the building and some of the metal contents, such as file cabinets and things like that, and even a lot of those were melted. But several things are striking about the steel itself. Not only was it chopped up into short pieces, it was also thoroughly cleansed of its spray-on insulation, because all the steel throughout this building apparently was covered with an inch or two of spray-on insulation; and yet if you look at Ground Zero there is no evidence that any of the steel has any of this insulation on it. It appears that the blast pressures were so high that they just cleansed this insulation off the steel. Analysis of the dust samples reveal that there is a significant component of fiberglass in amongst the concrete powder and other things. So apparently it just got blown away and mixed in with all this fine powder that was floating around. In addition, the steel, if you look at some of the pictures of Ground Zero, you see it looks like the steel had been melted as it was falling, or softened as it was falling, because you see large pieces of steel like draped over World Trade Center Three, one of the buildings that

was largely crushed by the fallout from the North and South Towers, and they looked like wet noodles covering these buildings. Also photographs from World Trade Center Six -- large parts of it were crushed by the falling debris ... it's very striking the way the steel beams looked like, kind of like wet noodles. Moreover, some of the studies, even that appeared in the FEMA Report, interestingly, one of the appendices talk about some limited studies of the steel that show some very peculiar features like intra-granular melting, and like rapid oxidation where entire pieces of steel a few inches thick were oxidized away so that they become like thin scrolls. Other reports describe some of this steel as looking like Swiss cheese. All of this makes no sense in terms of the official story. I mean hydrocarbon fires would never do that to steel. It's something very energetic that's going on here. Also residues of sulfur were discovered in the steel and where did that come from?

BF: So the mystery here is how were the buildings collapsed. They didn't collapse because airplanes hit them and as you have said it would have taken a tremendous amount of energy to bring the buildings down and bring them down that quickly, and pulverize all the concrete, the glass, melt the steel, because obviously the steel was molten. These were huge buildings. So the mystery here is how did the buildings collapse?

JH: It gets speculative to talk about what actually caused these events. Because, whereas we can talk with some certainty about what's true of the evidence and whether or not it fits the official story, which it clearly doesn't, the official story cannot account for what happened.

BF: Can we talk about how World Trade Center Seven, for instance, collapsed. Now, the FEMA report there is a quote here from the FEMA report which says the cause of the collapse, and we're talking about World Trade Center Seven -- the smaller building has never been determined. In this building performance study, the only government document that address the collapse of building in any detail, stated: "The specifics of the fires of World Trade Center Seven and how they caused the building to collapse remain unknown at this time. Further research, investigation and analysis are needed to resolve the issue." But could a controlled demolition account for the collapse of World Trade Center Seven?

JH: Yes, probably so, certainly the most popular theory of Building Seven is that it was a conventional demolition, which it is well understood how that's done in terms of the placement of the charges. And certainly the imagery seems to fit that. You see the characteristic streamers coming off the building as smoke emerges from it ... the way that the building steps into its footprint. So, you know, that's the most popular theory that it was just pretty much a conventional demolition.

BF: So that's a possibility.

JH: Yes. Uh huh.

BF: That's a realistic possibility.

JH: Yeah. And I just wanted to highlight that quote there. It's very interesting that even the official government report that supposedly explains all these events reveals the authors did not commit to any understanding of it. They imply that the fires did it but you know, if you read the report it's clear that they don't have a clue or that they're not admitting to have a clue. They don't dare not mention any demolition theories but they talk about the "potential energy of the diesel fuel," which completely ignores how that potential energy could be

harnessed to produce this result.

BF: With regards to the collapse of the Two Twin Towers [sic], that's a much harder collapse to explain, isn't it?

JH: I think so. The most popular theory among the skeptics of the official story is that it was a demolition using explosives. Now, of course it does not look a conventional demolition like Building Seven, but it's important to note that you could demolish a building in any number of ways. You don't have to demolish it in a standard way. If the explosive charges were timed to go off starting at the collapse zone and then they were marched down the building as rubble advanced down the building ... you could see that, at least in terms of the gross features of the collapse, it may be explainable by the buildings being rigged with numerous explosive charges. So it would differ from a conventional demolition in that the detonations would start at the collision zone and go down instead of starting at the bottom and going up. But the demolition of the towers would have differed from typical demolitions in other respects as well. Much more explosives would be required, given the tremendous exploding dust clouds and the thorough pulverization of the solids inside the building. This all makes me skeptical of that conventional theory, what I call a distributed explosive theory. To accomplish the expansion of the dust cloud that I calculate, you'd need about sixteen tons of high explosives like amatol.

BF: But what I want to ask you about that now ... Van Romero, the demolition expert, from Albuquerque, New Mexico -- didn't he say in the article that it wouldn't have taken that many of explosives?

JH: Well, I don't know if he did any calculations on the expansion of the dust cloud or that lateral energy of casting all the materials of the building in all directions simultaneously. But what his statement might be based on is the fact that any conventional demolition, the amount of explosives used isn't necessarily that great, because it's enough to destroy the key structural vertical supports of the building, but then as the building falls, they actually harness a lot of the kinetic energy of the falling building to accomplish a lot of the work. Now that wasn't the case in the Twin Towers because the Twin Towers were blown up from the top down, and so there was only a small amount of the building above that collapsed zone, which certainly couldn't be counted to do much of work of destroying these buildings. This is particularly true of the North Tower, in which you only had fifteen floors of very lightweight construction above the crash zone, which couldn't be counted on to do much of the destruction. Particularly considering the way that these buildings blew out. Probably eighty or ninety percent of the mass of these buildings was falling outside their footprints, which invalidates the official story, because how could the mass above the crash zone be crushing these buildings when the vast majority of this mass isn't even falling in a way that's aligned with the part of the building that it's supposed to be crushing. It's falling outside of the building. The building is disintegrating as rapidly inside of its footprint -- inside the profile of the building or where the building was -- that's disappearing just as rapidly as this material that's falling freely through the air outside of the profile of the building. So anyway, there are features of the disintegration, the explosive destruction of the towers, that make me skeptical that a conventional demolition setup could have accomplished it, even though it's certainly possible that the buildings could have been rigged with enough explosives, you know, sixteen tons isn't that much -- and they could have been radio controlled so as to set them off in a precise manner -- and so forth. There are a number of factors, which make me skeptical of that, such as the lack of evidence of high overpressures in the first second or two of the collapses. You don't see walls blowing out right away. You

see them kind of sloughing down into themselves, and then the evolution of these dust clouds as the structures just kind of melted into themselves. Also the thoroughness of the pulverization of the concrete makes me wonder about conventional demolition, because with explosive charges the destructive power of the charge falls off with the square of the distance from the charge. So if you even have a chunk of concrete forty feet away from the nearest charge, you would need a pretty strong charge to make sure that that gets pulverized; and it just doesn't seem plausible to me because the analysis of the dust reveals that most of the dust was probably less than one hundred microns in diameter. That's thinner than a human hair. And this is just so thorough so consistently throughout the building. So it makes wonder how conventional charges could have accomplished such thorough and consistent destruction.

BF: I'm speaking with software engineer and research scientist Jim Hoffman. Today's show "Your Eyes Don't Lie, Common Sense, Physics and the World Trade Center Collapses, part II". I'm Bonnie Faulkner. This is Guns and Butter.

You have your own theory in terms of what may have cause the Twin Towers to collapse. A theory about what could have generated the amount of energy that in your opinion that was required to collapse the Twin Towers.

JH: It's sort of a working theory. It's somewhat speculative but I think it's physically possible, and it's not really a theory of where the energy came from but of how the energy was delivered to where it was required to produce the observed destruction. Note that the gross features of the collapses, such as the top-down destruction, can be explained by the conventional or distributed explosives theories I just described, just by controlling the order in which the charges are detonated in order to simulate a "progressive collapse." But, there are a number of more subtle features in the collapses that I don't think are adequately explained by a conventional explosives theory. There are things like the lack of overpressures that are observed in the first about two seconds of each collapse, in which you don't see the walls just blowing out as I'd expect you'd see if there were high explosives in there. Rather you see the whole thing just telescope into itself. The North Tower just neatly telescopes into itself and then it starts to puff out with all of this pulverized concrete. Another feature is the fineness of the pulverization of particularly the floor slabs in which there is hardly any evidence off even like gravel-size pieces. The concrete throughout these buildings was just thoroughly pulverized, and in order to do that with conventional explosives you would need to have the explosives very widely distributed, given that the blast pressure from an explosion falls off inversely proportionally to the square of the distance from the source of the explosion. It just seems like you need a lot of very high explosives and just thousands of individual packages of them to accomplish that level of consistency of pulverization of the non-metallic components of these buildings. There is another rather peculiar feature that is noted on some websites -- the persistence of the North Tower spire, which is a fragment of the core structure that goes up well above the height of Building Seven, up maybe eight hundred feet, that lasts about thirty seconds before it collapses; and I would imagine that with conventional explosives that the lateral forces would just rip apart any structure like that.

So this rather Sci-Fi theory that I have can be described as a kind of microwave interferometry, but it's a particular configuration of microwave beams that could have been driven by some kind of device that was, say, trucked in to the basement of the towers. Now, there were subterranean roads and things in this deep sub-basement of the towers, so there is a way that you can drive a truck into there, and you could have a maser, say, which is

pumped by some source of energy, and I don't know how you pipe the energy in. Based on my analysis of the North Tower dust cloud I'm thinking that energy in the neighborhood of 1.5 gigawatt-hours were required to produce this destruction and that energy would to have had to been delivered in about fifteen seconds because that's how long it took this wave of demolition to travel from the crash zone down to the ground. However it seems ... and that's a huge amount of energy and it kind of stretches the imagination to wonder how they would have piped that much energy into this device that created these microwave beams, but I calculated that it would take something like a copper cable of maybe a foot thick or maybe a little less, to deliver that much energy. Furthermore, since Building Seven straddled a ConEd electrical sub-station that might have had something to do with the delivery of energy, or maybe even the storage of the energy -- perhaps they had banks of super capacitors or something -- to provide the energy, to deliver it when the towers were actually destroyed.

Now about the specifics of how these microwave beams would have worked. My theory is that they had coaxial microwave beams that were sort of conical. In other words, they originated from a point source down in the basement and formed a narrow cone that kind of grows as extends up, thereby encompassing almost all the tower except for the lower part of the perimeter walls, which I mentioned were the only parts of the buildings that survived above the rubble pile. And if you have microwave radiation in the region of say the centimeter wavelength -- microwave radiation is another form of electromagnetic radiation just like radio waves and light ... visible light and x-rays and that kind of thing -- but microwaves are invisible to solid materials. So you can project microwaves right through solid material but the material, depending on the type of material will pick it up or not pick it up. So you can imagine the microwave being beamed through the building but the key part of this theory is this idea of interferometry, and what that means is that when you have coherent electromagnetic radiation, so imagine a wave like even light or a much longer wavelength, coherent means that all the waves are aligned and vibrating in the same direction. So think of it like a wave -- you know, like a sound wave that's just an oscillating magnetic field. And if you imagine that you have multiple superimposed beams with the same source that is coaxial so that they are projected in precisely the same geometry -- they originate from the same device that each one of them is independently controlled, you can precisely control the zones at which these waves do what is called constructively and destructively interfere. Now constructive interference has the effect that the waves will add together, so you'll get all this energy manifesting in one part of the beam, say at maybe at a thousand feet above the source, whereas destructive interference can be used to cancel out the beam everywhere else. So you'd have these multiple superimposed beams that are being projected up through the buildings, and phase shifts and wavelengths of the individual components are being precisely controlled so as to generate a zone of constructive interference -- a very precise zone of constructive interference that delivers the energy to wherever they want to, so they start at the crash zone where the planes hit and that starts to break up the buildings at those points, and then they vary the wavelengths to march this zone of constructive interference down the building, causing thorough destruction of the building, as this rubble is falling through the air, keeping [this interference zone] just slightly ahead of the falling rubble. So that you don't see the building falling apart, you just see it disappearing into these huge dust clouds. That's basically the theory. It's coaxial, coherent beams of long wavelength microwave radiation that are precisely controlled so as to create a zone of constructive interference that can be varied so as to traverse down the building and deliver the destructive energy to where it's needed to produce the destruction. And to me this theory comports very well with some of the other observations of exactly what happened. For instance the way the steel seems to have melted in mid-air and been

cleansed of its insulation; the way that the concrete is so thoroughly pulverized; the microwaves would have delivered heat to the concrete so as to cause instant vaporization of the about one percent moisture in the concrete, causing it to blow apart; and it would blow papers out of the building because the paper wouldn't pick up much of the heat from the radiation; whereas, things like file cabinets and other things would, so they would be just be melted and squished down, and the steel would turn into wet noodles and all that, in just the space of a few seconds.

BF: Can such a device as a maser exist?

JH: Oh, masers exist. A maser is like a laser. It is a stimulated emission device where you have some way of pumping energy into it, and you get this coherent wavelength that bounces back and forth and it keeps adding up and it breaks through one of the sides of it and then you have just a very coherent beam. Coherent, again meaning that all the oscillation is synchronized and it's exactly the same wavelength, all the exactly same phase shift and orientation. So, it's the same principle applied to a much longer wavelength. That wavelength that I'm talking about is like almost in between microwave and radio wavelength. What I also note is that what I'm talking about is a very specific application of masers where you have these multiple superimposed coaxial beams generated so as to do this constructive interference thing.

BF: How did you come up with this theory?

JH: Well, just looking at the pattern of destruction and trying to think of something that would fit it. Because other people have talked about using microwave interferometry, but they've talked about like projecting one beam up and another beam across from some other building like Building Seven, but those don't make sense to me because I would think that you would see an asymmetry based on where the beam is coming from and you'd see some other manifestations of it that would be visible. But what's so striking about the way that the towers self-destructed is the way that the zone of the destruction so clearly marches down the building and the way that it stayed so symmetric and all that. And there is also an elegance to it, because all you have to do is ... if this device exists, this super high-energy maser that can create these multiple superimposed beams that can create a zone of destruction and control it ... all that the perpetrators would have to do would be to drive these trucks into the sub-basement. You know, it eliminates the need to rig the building with explosives or to have some ship out in the Hudson that projects a beam or something coming from space. There are other reasons that I find other variants of those theories not very plausible. Like if it was some space weapon they would ... there would be too much of a problem with scattering of the beam. You know, a lot of these theories are very implausible. And one thing that I would add is the theory that I just laid out has a very high unbelievability factor, and I think that even though I find it the most plausible theory that I've seen, I think that if you consider that 911 was a psychological operation, that was designed to traumatize people and to prevent people from discovering the truth, then the very means that they look for to accomplish the attack are the ones that will simply have a high unbelievability factor around. So, when you talk of high-energy weapons, it just sounds like science fiction.

BF: Too bizarre to be believed.

JH: Yeah.

BF: How strong of an energy source would you need to operate something like a maser?

JH: Oh well, like a laser, it comes in all different ... you know you can have ones in all different energy levels. Like, you know, you have those little lasers on pens ... those are very low energy. What I'm talking about is a maser of such high energy that there is no public knowledge of anything that energetic existing. I'm talking about very high energy: 1.5-gigawatt hours of energy in fifteen seconds is a huge energy flux.

Another thing about this theory that it agrees with in terms of the physical evidence is this another rather bizarre observation of the attack and the collapses, is that there is this afterglow that's observed in both tower collapses that occurs about, in the case of the North Tower, I think it's seventeen seconds after the collapse starts. Suddenly the sky gets really bright right above where the tower was. This is observable on all the video recordings that show that part of the collapse. All of a sudden everything gets much brighter. And if you think of this theory, you think of the beam destroying the building, and once the building completely falls away you have kind of this beam that's still there, and it's just illuminating the sky. And then the next thing that happens is that the whole mechanism destroys itself, because there is so much excess heat energy the whole device just melts. And, of course, it would be designed that way because part of the objective is to destroy the evidence of how this was accomplished.

BF: But where would they get the energy to run this device?

JH: Oh, that's a good question. You know, if it only required an eight inch cable to pipe it in you would can imagine an eight inch cable being run for hundreds of miles to some big energy storage facility or some who-knows-what. That is another part of the theory that's another incredible thing. How did they pipe in that much energy? I estimate that it would take about a tenth of the volume of Building Seven in super capacitors to store that much energy, just for one tower.

BF: But what about the electrical substation under World Trade Building Seven. Would that have been enough?

JH: Well, yeah, but that's like a switching station with transformers. It's not an energy storage facility. So you'd need some way of actually piping the energy in.

One thing that is very important to understand is how much of the budget of the Pentagon and secret government agencies are completely off the map. How much the budget is off the map, and how much money they have to explore, you know, technologies that there is no information in the public about. And that these operations are run on a need-to-know basis so that not a lot of people need to know what the full picture is -- if there is some device that exists, some incredible technology that we have no idea about. Another thing that seems kind of impossible is how many people would be needed to construct such a thing. Well, if you understand how the military works and how much things are done on a need-to-know basis, people have live their own little box and they work on some part of a project but they don't have a clue about what the larger picture is, and so, I think that's probably another thing that's really important to understand and the September 11th attack, if it's an inside job, was pulled off, is that it was probably a very small group of people but that they employed a lot more extensive resources through the use of technologies and things that were developed as part of these large off-book budgets and things like that.

BF: So who knows, the energy source could have been something out of a black ops operation of non-lethal weapons, who knows.

JH: Yeah. Uh huh. Microwave energy can be beamed from space. Like they can have a fairly focused microwave beam that will beam down huge amounts of energy from space to some receiver. Of course you need a receiving station to receive it and that couldn't have been in downtown Manhattan. But with really thick copper cable you could have delivered the energy for hundreds of miles.

BF: But you don't have a theory as to what the energy source was. It could have been anything.

JH: It's just electrical energy, so basically you need some way of producing it at some source and then delivering it, or some way of storing it, maybe on-site in Building Seven or something like that, you know. It's just electrical energy, it just doesn't ...

BF: So it's feasible to have done that in your opinion.

JH: Yeah. Yeah. Yeah. Uh huh.

BF: Okay. What about the evidence at the crime scene that remains: the pieces of steel, the pulverized concrete. Now this is the evidence that would need to be examined to answer the mystery of how did it happen? How did the towers collapse? How did World Trade Center Seven collapse? In order to determine such a thing and an investigation would have to be held and the evidence would have to be examined. What happened to all of the refuse and the rubble at the World Trade Center?

JH: Well, before answering that I just want to emphasize the importance of this issue of analyzing that evidence. Because clearly what we have here, in the total collapse of ... these completely unprecedented events ... the total collapse of World Trade Center One, Two, and Seven; that nothing like that has ever happened with fire, primarily in the case of the Twin Towers, or exclusively in the case of Building Seven, being blamed for the total collapse of a steel-framed skyscraper. Nothing like that has ever happened, so, clearly the collapses of these three buildings were the three largest and most mysterious engineering failures in the history of the world, without a doubt. So, you know, certainly they warranted the most careful and painstaking investigation. I mean Ground Zero was far more important than any archaeological site or anything in terms of the amount of care that should have been taken in documenting the evidence and preserving it to discover what the nature of these structural failures was for ... even accepting the official story ... so that buildings could be made safe, so that this phenomenon couldn't happen again. But yet, when you actually look at what happened and the way that they treated Ground Zero ... in the initial aftermath they were talking about rescue operations even though it was clear that there were virtually no survivors -- they pulled out just a couple of people within the first few days of the attack I think and then nobody after that -- and meanwhile, they were sifting through Ground Zero ... they sealed off the area and tightly controlled who could see Ground Zero. They threatened people with arrest for even attempting to take photographs of Ground Zero, and meanwhile, they started ramping up the removal of the steel.

And what did they do with the steel? Did they take it to a warehouse for further study? Did they photograph the site and carefully document where the pieces came from and, you

know, make grids and carefully preserve -- carefully document the crime scene and then carefully preserve the evidence? Well, the fact is pretty opposite from that. They started to remove the steel almost immediately and started shipping it away. Within eleven days of the attack the City accepted a plan from Controlled Demolition Incorporated to recycle the steel. That meant that the steel would be removed from the site and shipped to blast furnaces in India and China as quickly as possible ... they'd be shipped overseas then and melted down so that, you know, that they couldn't be analyzed any further. Meanwhile, FEMA was entrusted with the sole authority to investigate this incident, even though FEMA is not an investigative agency. FEMA assembled a group of volunteer investigators from the American Society of Civil Engineers, and this was basically the only investigative body. The investigators were un-funded. This was a strictly a volunteer effort, and these investigators weren't even allowed access to Ground Zero. Rather they were maybe allowed to see some pieces of steel that ended up at Fresh Kills Landfill where they were sifting through some of the rubble to hopefully find remains of survivors. Meanwhile, the vast majority of the steel never even stopped there. It just was loaded on ships and shipped off to Asia. By the time this group of engineers, the "Building Performance Assessment Team", that FEMA had assembled, wrote their report, I think, in May of 2002, they, as we talked about, indicated that further study was necessary to determine the cause of these collapses. Well, how convenient that by the time they released the report, Ground Zero had been thoroughly scrubbed and all the steel ... virtually all the steel was completely destroyed, except for a few artifacts that NIST has and is supposedly still studying, and there is a, you know, few pieces out of hundreds of thousands pieces of steel. And the few pieces that they do have they don't even have any idea of where it came from. So, it was clearly an effort to prevent genuine investigation from taking place, of these just completely unprecedented failures. Now in the case of the Twin Towers, one of the excuses for destroying the steel was, "well they have to remove it to find any possible survivors and get it out of there as soon as possible because it was still a rescue effort at that point." But in the case of Building Seven there was no one thought to be buried in the rubble. So what was the big hurry of removing the rubble in Building Seven. And, even the case of the main part of Ground Zero ... the Twin Towers ... the really rapid part of the cleanup operation started around November, when it was no longer officially a rescue effort, but then Rudolph Giuliani severely limited the number of New York City Fire Department personnel who could be on the site -- they were trying to recover the remains of their fallen brothers in the fire department -- and the rate of cleanup rapidly accelerated. They brought in really large machinery; they even built new infrastructure in the form of docks to expedite the removal of the steel. They put GPS locators on the trucks that were hauling the steel to the barges at the expense of a 1,000 dollars a pop to make sure that the steel didn't go anywhere other than to the blast furnaces, apparently. I call this section highly expensive garbage, given that the people in charge considered the steel garbage, useless to any investigation in this age of computer simulations, and that's referring to a quote of Mayor Bloomberg, who said "if you want to take a look at the construction methods under the design that's in this day and age what computers do. Just looking at a piece of metal doesn't tell you anything." So you have the Mayor who succeeded Giuliani basically saying, "Well, there is no point in preserving the evidence because we can just model it all with computers." So the people running the cleanup operation clearly were trying to get it out of there as quickly as possible. They supposedly considered it just useless, and yet they installed these GPS locator devices on all the trucks hauling away the rubble, and the Securities Solutions dot com documented this case in which one of the drivers of a truck took an extended lunch break of a hour and a half and was dismissed.

BF: So they could electronically monitor the movement of all of the trucks carting away the

rubble from the World Trade Center.

JH: Right.

BF: And if there were deviations ... you mentioned this guy who took a long lunch, he got fired.

JH: Yeah. Uh huh.

BF: So it was all monitored to make sure that nobody interfered with the removal of this rubble.

JH: Right. And as I said also, they made sure that people didn't take photographs either. Now there are some photographs of Ground Zero because some of the people working at Ground Zero apparently took some photographs on the sly and so forth, and some of those have made it to the web. But there is remarkably little public evidence, even of Ground Zero, because they were so strict in preventing people from doing anything that would have documented what was actually there and what the rubble looked like and, you know, anything that would have been useful to a real investigation.

BF: How did the firemen on the scene feel about this? Were they pretty much after initially allowed to search for a fallen fireman were they then chased off the scene?

JH: Yes. On November second, Rudolph Giuliani basically barred the fire department personnel from Ground Zero because they were very interested in recovering the remains from the hundreds of firefighters who were killed when the towers collapsed. So they were extremely upset when they were barred from Ground Zero and the only people who were allowed on Ground Zero were the people who were cutting up the steel and getting it out of there as quickly as possible. This happened immediately after they recovered about two hundred million dollars' worth of gold and as soon as they recovered that gold then they stepped up the pace of the removal operation, and barred all but a few FDNY firefighters from the scene. The firefighters were so upset that they ... there was a major altercation where ... broke out between the firefighters and Giuliani's police who were barring them from the site.

BF: Now, you mention the recovery of gold. Where was gold recovered from?

JH: Well, there were vaults in the basement of World Trade Center Four. Now I note that's to the east of the South Tower so it's not directly under the most intense area of destruction, and it's not clear how much precious metals were stored in these vaults because there was a lot of secrecy around it. There are some rumors that as much 160 billion dollars of gold bullion was stored in these vaults. But when I researched the amount that I could account for from records prior to September 11th, I came up with a total of about 950 million dollars between the silver and the gold and Comex vaults. Comex is the company that apparently controlled this vault in World Trade Center Four. And yet, the only news reports from late October and early November that talk about the actual amount of gold recovered put the amount at 230 million dollars. Now there is a big gap between 230 million dollars and 950 million dollars, and 950 million dollars is almost certainly a very conservative estimate because there might have been multiple times the amount of that stored and no public record of it. Further adding to this are reports that of a ten-wheeled truck, loaded with gold,

discovered in one of the subterranean roads at Ground Zero and that there were no dead people around the truck. The truck was apparently carrying gold away from the vault and had been abandoned some time during this disaster. So it seems there is evidence of a concerted operation to remove the gold and yet pretend that the gold had somehow been destroyed in the tremendously destructive event of the collapse of the Twin Towers. Well, I remind people that gold is a dense malleable metal that doesn't simply vaporize or (laugh) turn into something else or otherwise disappear.

BF: Who owned the World Trade Center? Specifically, the Twin Towers, World Trade Center Seven, actually the whole World Trade Center? It was built with public funds, right?

JH: Well, except for Building Seven, which was kind of the anomaly because it wasn't really part of the original World Trade Center. I say that it's World Trade Center in name only. The rest of the World Trade Center Complex was built by the Port Authority with public money but only came under private control in the summer of 2001 when Silverstein, the owner and the person who built World Trade Center Seven, acquired control of the entire World Trade Center Complex through a ninety-nine-year lease that only closed apparently six weeks before the disaster. So the entire World Trade Center Complex went into private hands for the first time merely weeks before the disaster. Furthermore, Silverstein secured a handsome insurance policy that would be worth, I think, 3.6 billion dollars for the entire Trade Center. Subsequent to the attack Silverstein has tried to collect twice over the entire valuation, that is 7.2 billion dollars, because he considers the event two separate attacks and thinks that he is entitled to two separate payments on the insurance, even though the insurance of 3.6 billion dollars reflected the value of the entire complex. Furthermore, this owner only put up ... I think a few hundred million dollars or maybe only a 100 million dollars of real money to acquire this asset and to acquire this insurance policy that would allow him to recover billions of dollars. Now, the outcome of this insurance claim in terms of the double claim is still up in the air and I think it's still going to the courts, but he has already recovered the 3.6 billion dollars.

The September 11th attack is the pre-eminent example of a psychological operation, or psy-op, designed to shock people into not understanding what they are seeing. The way I describe it is the events of September 11th were precisely choreographed in order to put people in a state of shock, so that by the time we got to the main event -- the destruction of the Twin Towers, which were the most direct attacks on people's psyche and the core of the attack -- people were psychologically numbed by all that had happened up to that point. We saw an extremely improbable series of events whose unbelievable shockingness was ratcheting up from one plane that was hijacked with knives, to two planes that were hijacked with knives, to the Pentagon -- supposedly the most well defended building in the entire world -- being hit, having been left wide open to attack. Then by the time the Twin Towers started to come down I think people were not in a critical state of mind. They were just in this open state of shock willing to accept whatever the news anchors were dishing out at that point, which are that the towers "fell down!" "Osama bin Laden, Osama bin Laden," you know, flashing his mug shot on the screen, and just driving home this Pavlovian association between the alleged perpetrators, who miraculously they had all figured out on September 11, and these horrendous destructive events. But when you look on a logical level, as several people have pointed out, why would the attack be spread out so that it started with the takeover of Flight 11 around 8:20, and continued with the tower impacts around 9:00 and the Pentagon getting hit at 9:40, and culminated with the tower collapses, which didn't start until almost 10:00? Why was it spread out so much, which would seem to make the story much more implausible, because it makes the whole air defense stand-down

look much more obvious? I mean if they had almost an hour and a half from the time the Flight 11 was taken over to the time the Pentagon was attacked, what possible excuse did they have to not scramble jets? And this matter of Bush continuing to read the goat story in the classroom and not being whisked away by his Secret Service detail even though the second tower had already been hit, and the fact that the four top men in the military establishment who were in charge of the military response to this were pretty much clueless until the Pentagon got hit; either that or they were watching Flight 77 approach the Pentagon and trying to figure out what to do, you know, even though you have this entire air defense network in place. So it really doesn't make any sense on that level. Logically it seems like a big red flag that they spread the attack out so much. But if you look at it from the point of view of psychological engineering and how the attack was spread out in order to give that sense of shock time to sink in, so that by the time we got to the main event -- the Twin Tower demolition -- people were in a profound state of disbelief and shock. It seemed to trigger a conditioned suspension of disbelief in the same way that movies do. I think that's a big part of it. So many people described the attack on the day as being like a disaster movie. I mean it had the same kind of scenes. It had those monstrous dust clouds chasing people down streets in Manhattan, and I think that that was a big part of how it was engineered to tap into people's conditioning to suspend disbelief when they see events of such ... those horrible events descending on Manhattan in particular, which is one of the most common settings of such disaster films.

BF: You've been listening to part two of "Your Eyes Don't Lie, Common Sense, Physics and the World Trade Center Collapses".

Jim Hoffman has been researching the World Trade Center collapses from February 2003 and has created an extensive website reporting his investigations and other aspects of the September 11th attacks. He can be contacted by e-mail at Jim@wtc7.net. Visit his website at www.wtc7.net. That's www.wtc7.net. Sound on today's show was recorded by Kelly Rimoares. Guns and Butter is edited and produced by Yarrow Mahko and me, Bonnie Faulkner. To leave comments or order copies of our show call 510-848-6767, extension 628. E-mail us at Faulkner@GunsAndButter.net or visit our website at www.GunsAndButter.net.